THE RECOVERY KERNEL

HEALTHCARE PROVIDER BRIEF

A Clinical Summary for Prescribers, Pharmacists & Mental Health Providers.

Your patient participates in the Recovery Kernel — an open-source, pharmacogenomics-informed addiction recovery framework. This brief summarizes the clinical framework, the supplements your patient may be following, relevant lab work, and the expected recovery timeline.

This is not a substitute for your professional judgement. It is a set of questions and hypotheses that your patient wants to discuss with you, based on CPIC guidelines and peer-reviewed research.

1. What Is the Recovery Kernel?

The Recovery Kernel is a neurogenomics-based recovery framework built on the premise that treatment-resistant addiction is frequently driven by specific, testable genetic variants that standard treatment protocols do not address. The framework targets seven primary genetic systems:

Gene	Clinical Role	Addiction Relevance
MTHFR	Enzyme limitante de vitesse pour la conversion du folate actif en SAMe, qui est ensuite utilisé dans la synthèse des neurotransmetteurs.	Variants reduce dopamine/serotonin baseline; substances compensate for this deficit.
COMT Val158Met	Clearance rate of dopamine and norepinephrine in the prefrontal cortex.	Val/Val (Warrior): rapid metabolism → tendency to seek stimulants. Met/Met (Worrier): slower metabolism → tendency to seek depressants.
CYP2D6	Primære metabolisator av opioider, mange antidepressiva.	PM: Prodrugs are ineffective; UM: Codeine/tramadol can be potentially fatal.
CYP3A4/5	Processes approximately 50% of all drugs, including fentanyl and most benzodiazepines.	Rischio di interazione farmacologica dovuto all'assunzione concomitante con pompelmo.
GABRA2/ GABRB3	GABA-A receptor subunit architecture — inhibitory tone.	High-risk: impaired impulse control, accelerated alcohol/benzo dependence, seizure risk.
OPRM1 A118G	Sensibilidade dos receptores μ-opiáceos.	G allele: requires higher opioid doses; better naltrexone response.
DRD2 Taq1A	Densidade de receptores de dopamina D2.	A1 variant: Approximately 30% reduction in receptor density → reward deficiency syndrome.

2. Recommended Lab Work & Pharmacogenomic Testing

Test.	Priorité.	Estimated cost.	Clinical Relevance
Homocystein (sérum).	High — first line	$30–80 (frequently included in coverage).	MTHFR proxy. Target <10 µmol/L.
CYP2D6 genotype (GeneSight / OneOme)	CPIC-Actionable	$330, self-payment required.	Altera as decisões de prescrição de opioides e antidepressivos.
MTHFR C677T + A1298C	High.	$40–150 (oftentimes covered).	Confirms methylfolate protocol. To take orally: avoid all folic acid.
COMT Val158Met	Moderate.	$40–100	Shapes antidepressant and exercise prescription.
Vitamin B12 (serum)	High.	$20–50	Target >400 pg/mL.
Vitamin D 25-OH	Moderate.	$30–60	Target 40–60 ng/mL.
GABRA2/GABRB3 (if there's a history of alcohol or benzodiazepine use).	High if applicable.	In GeneSight panel	Quantificazione del rischio di crisi durante la sospensione della terapia.

3. Supplement Protocols

These supplements are based on mechanisms of action and do not have specific clinical trial evidence related to addiction. Important drug interactions are listed in the final column.

Supplement	Dose.	Target Profile	Provider Notes
L-Methylfolate (NOT folic acid)	7.5–15mg/ day	MTHFR variants	T/T: Avoid all synthetic folic acid. Start with a low dose and gradually increase it – high doses can cause overmethylation (anxiety, insomnia).
Methylcobalamin B12	5,000 mcg sublingual/d ay.	MTHFR	No significant interactions. Monitor levels at 3 months.
Magnesium Glycinate.	400–800mg/d	Worrier; GABRA2	Caution: renal impairment; mild potentiation of antihypertensives.
L-Theanine	400mg twice daily.	Worrier; GABRA2	Sedation with benzodiazepines may be used; monitoring is required.
L-Tirosina	1–2g/d (på tom mave)	Warrior; MTHFR	Contraindicated with MAOIs. Caution advised for individuals with thyroid disease. Do not combine with levodopa.
NAC (N-Acetylcysteine)	1,200–1,800mg/d	All profiles.	RCT evidence for craving reduction. Caution with nitroglycerin.
SAMe	800mg/day (morning)	Worrier; MTHFR	Contraindicated in bipolar disorder without a mood stabiliser. Avoid with MAOIs. May trigger hypomania.
Omega-3 EPA/DHA	2–3g/d	All profiles.	Mild anticoagulant >3g — notify if on warfarin.
Taurine	1,000mg/ day	GABRA2; Worrier	Well-tolerated. No significant interactions at this dose.

4. Recovery Timeline — Assessment to Homeostasis

Phase	Timeframe	Clinical Milestones
Phase 1: Biological Foundation	Months 1–3	Methylation protocol adjusted. Homocysteine levels decreasing. Sleep quality improving. Energy levels stabilising. Brain fog lessening. Cravings starting to decrease (20–40%).
Fase 2: Reducción gradual + Apoyo	Months 3–6	Substance reduction initiated after Phase 1 foundation confirmed. Full supplement stack in place. Emotional resilience is measurably increasing. Cravings reduced by 40–70%.
Phase 3: Environmental Redesign.	Months 6–12	Neurochemical baseline approaching homeostasis. Exercise, sleep architecture, and social environment reconfigured to match genotype. Supplement taper begins based on symptom resolution.

Beyond Year 1	Ongoing.	Supplementation is discontinued once symptoms resolve—not indefinitely. If neurochemical instability recurs (due to illness or significant stress), the participant may revert to their initial supplement regimen to help restore methylation. This is not supplement dependence; rather, it's a way to maintain optimal genetic function.

5. Before & After: Expected Outcomes at Homeostasis

Scale 1–10. Before = typical intake presentation. After = expected Month 6 with adherent protocol. Early weeks may show little change or temporary worsening before marked improvement at Months 3–6.

Depleted Worrier (MTHFR High + COMT Worrier)

Measure.	AT INTAKE (avg)	AT HOMEOSTASIS ~Month 6
Stabilità dell'umore.	2/10	7/10
Energy level.	3/10	7/10
Intensity of anxiety.	8/10	3/10
Sleep quality.	3/10	8/10
Intensité des envies.	8/10	2/10
Brain clarity.	3/10	8/10

Understimulated Warrior (MTHFR High + COMT Warrior)

Measure.	AT INTAKE (avg)	AT HOMEOSTASIS ~Month 6
Motivation / drive	2/10	7/10
Stabilità dell'umore.	4/10	7/10
Energy level.	3/10	8/10
Intensité des envies.	7/10	2/10
Fokus/attention	3/10	8/10
Sleep quality.	4/10	7/10

GABRA2 High-Risk (Alcohol / Benzo Pattern)

Measure.	AT INTAKE (avg)	AT HOMEOSTASIS ~Month 6
Control of impulses.	2/10	6/10
Anxiety at baseline.	9/10	3/10
Sleeping without aids.	2/10	7/10
Interruzione della voglia.	1/10	6/10
Emotional regulation.	2/10	7/10

⚠ CRITICAL SAFETY NOTES FOR PROVIDERS

CONTRAINDICACIÓN PARA EL ÁCIDO FÓLICO: El ácido fólico sintético empeora la metilación en pacientes con el genotipo T/T de MTHFR. Reemplace con L-metilfolato en todos los suplementos y alimentos fortificados.

ALCOHOL/BENZO DEPENDENCE: Any significant dependence requires medical supervision. The Recovery Kernel explicitly defers all taper decisions to prescribers. GABRA2/GABRB3 variants increase seizure risk.

SAMe + BIPOLAR: Contraindicated without concurrent mood stabilizer. Can precipitate hypomania.

CYP450 POLYPHARMACY: Patients taking 3 or more medications with PM/UM status require a pharmacist-level drug interaction review before any additional medication is added.

Resources

· CPIC Guidelines: cpicpgx.org

· FDA Pharmacogenomic Biomarkers: fda.gov/drugs/science-and-research/table-pharmacogenomic-biomarkers-drug-labeling

· Recovery Kernel (texto completo, acceso abierto): github.com/JRToken-NGI/recovery-kernel

· Recovery Kernel (PDF/ePub/Kindle): archive.org/details/the-recovery-kernel

· Recovery Kernel (video, gratis): Recherchez "Recovery Kernel" sur YouTube.

· GeneSight panel: genesight.com | Interactions Checker: see GitHub repository